

Welcome to the **Unified Access Framework for Gridded Data (UAF Grid) wiki page**. The UAF Grid project is a NOAA-wide (meaning all NOAA Line Offices are involved!) effort to develop a gridded dataset integration capability.

The capability is being developed using several de facto standards: netCDF, which provides the abstract data model, software libraries and a persistent binary format; the Climate and Forecast (CF) metadata conventions; the OPeNDAP protocol for web transport of data subsets; THREDDS XML catalogs which provide a distributed topology connecting data suppliers; and an OGC compatibility layer that provides access to the grids through WMS and WCS.

The initial focus has been to develop a NOAA-wide THREDDS catalog of CF-compliant datasets (e.g. model outputs, satellite products, High Frequency radar observations, etc.) and to connect the catalog to several popular client tools (e.g. Matlab, LAS, ERDDAP, Google Earth, etc.) to enable direct access and use of the datasets.

For more information about the project, how to get involved, and what datasets are currently available please see the links below...

Contents

- 1 Description of the problem/issue being addressed:
- 2 What is being proposed:
- 3 What are some of the benefits of this effort:
- 4 What datasets are currently available:
- 5 What technologies and standards are being utilized:
- 6 Who is doing this:
- 7 How to get involved:

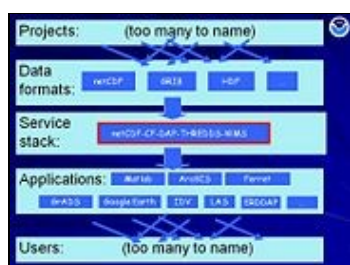
Description of the problem/issue being addressed:

- NOAA's data systems are insufficiently integrated. This situation is a reflection of technology and management and decision-making strategies of the past that have tended to fragment data management, rather than to unify it. Lines of funding have traditionally been matched to observing systems -- satellites, ships, profilers, etc.-- and data life cycle points -- measurement, real-time applications, climate analysis, archive, etc. Data management has been considered to be "owned" by the observing system element or the function. Each observing system element has therefore developed individualized approaches to data management, often involving the development of unique (and non-interoperable) data formats and protocols. Real-time data management strategies were devised with little thought to analysis or archive, and so on. Predictably these traditions have hindered the development integrated data management.
- Communities of interest within data management are most naturally organized by structural type of data. The lines between these communities are drawn from the answers to key data management questions such as, what techniques are appropriate for searching for these data? for transporting (interchanging) these data? for visualizing or analyzing these data? for storing or archiving these data?
- Communities of interest defined by structural data types provide a natural way to organize data management efforts and specify standards required for interoperability. For example, the kinds of standards, best practices, metadata, and access interfaces required for time-series data collections are similar for atmospheric, oceanic, hydrological, biological, or climate data.

Overview_and_benefits_of_the_GEO-IDE_UAF_Grid_Project

- Traditional communities of interest defined by pattern of usage will continue to thrive of course, based upon scientific and societal goals. These communities will provide the requirements to an increasingly integrated data management community. For example, weather forecasters will continue to require synoptic access to observations; climate modelers will continue to view the same observations as time series. The role of the data management community will be to find unified solutions that address both of these usage patterns.
- The goal of the Unified Access Framework project is to build momentum for implementing NOAA Global Earth Observation -- Integrated Data Environment (GEO-IDE) through a phased approach to data interoperability that:
 1. Engages data providers, users, and IT folks
 2. Leverages stable, proven solutions (one meaning of "standards")
 3. Has a high probability of demonstrable successes.

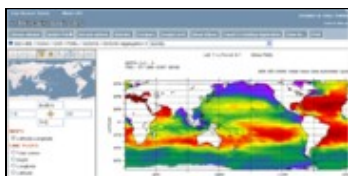
What is being proposed:



UAF Grid Overview

- NOAA is developing a gridded dataset integration capability that leverages several de facto standards: netCDF, which provides the abstract data model, software libraries and a persistent binary format; the Climate and Forecast (CF) metadata conventions; the OPeNDAP protocol for web transport of data subsets; THREDDS XML catalogs which provide a distributed topology connecting data suppliers; and an OGC compatibility layer that provides access to the grids through WMS and WCS.
- The initial focus has been to develop a NOAA-wide THREDDS catalog of CF-compliant datasets (e.g. model outputs, satellite products, HF radar observations, etc.) and to enable the preceding web services (DAP, WMS, WCS).
- A parallel activity to harvest, repair, and extend metadata for the datasets will improve users' ability to discover and make use of these gridded datasets.
- UAF Overview Presentation
- Full Action Plan

What are some of the benefits of this effort:



UAF Grid available via LAS

- Direct access to a variety of gridded datasets through a single top-level URL
- The ability to view/explore/analyze a variety of gridded datasets in a variety of clients (e.g. LAS, Matlab, ERDDAP, etc.)
- Standard metadata pushed to several existing discovery mechanisms (e.g. Geospatial One Stop, NNMR, GCMD, etc.)
- The ability to compare different model output products with actual observations and to then use that knowledge to improve the models.

What datasets are currently available:

The table below describes the current UAF Grid holdings available via a THREDDS catalog.

NOAA Line Office	Center/Office/Lab Name	Description of Datasets Served
OAR	Pacific Marine Environmental Laboratory	Comprehensive Ocean-Atmosphere Data Set (COADS), World Ocean Atlas, others?
OAR	Geophysical Fluid Dynamics Laboratory	Intergovernmental Panel on Climate Change (IPCC) CM2.0 Runs 1 - 3
OAR	Atlantic Oceanographic and Meteorological Laboratory	Caribbean and Gulf of Mexico Operational Data
OAR	Office of Climate Observation	Observing System Monitoring Centering gridded observation count summaries
NMFS	Pacific Fisheries Environmental Laboratory	Satellite datasets and Simple Ocean Data Assimilation (SODA) POP model runs
NESDIS	National Geophysical Data Center	Aerosol and global Sea Surface Temperature (SST) data
NESDIS	Ocean Nomads	Navy Forecast Model Run Collections
NWS	National Data Buoy Center	High Frequency (HF) radar data

What technologies and standards are being utilized:

The following standards and technologies are being utilized in the UAF Grid Project:

- THREDDS Data Server
- Data Access Protocol
- NetCDF - A set of software libraries and self-describing, machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data.
- NetCDF Climate and Forecast Metadata Convention
- Web Map Service
- Web Coverage Service
- ISO 19115
- NcML - The NetCDF Markup Language (NcML) is an XML dialect that allows you to create

What are some of the benefits of this effort:

Overview_and_benefits_of_the_GEO-IDE_UAF_Grid_Project

Common Data Model (CDM) datasets. The purpose of NcML is to allow: 1) metadata to be added, deleted, and changed, 2) variables to be renamed, added, deleted and restructured and 3) data from multiple CDM files to be combined.

Who is doing this:

- The project is being coordinated by NOAA's Data Management Integration Team
- Technical development is being led by UAF Technical Team

How to get involved:

- If you are an interested data provider?
- If you are an interested data user?